


EXHIBIT 106



A Survey of Dispensing Costs of Pharmaceuticals in the Commonwealth of Kentucky

Prepared for the
Kentucky Department for Medicaid Services

November 2001



Myers and Stauffer_{LC}

Certified Public Accountants

Appendix D. Dispensing Cost Issues for Institutional and Intravenous Pharmacies

Based on previous experience performing dispensing cost studies for the Commonwealth of Kentucky, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities and pharmacies that dispense intravenous prescriptions. This appendix includes a discussion of issues specific to these pharmacy types.

Institutional Pharmacies

The survey data supported the conclusion that there was not a statistically significant difference in dispensing cost for pharmacies that primarily serviced long-term care facilities versus pharmacies with a more traditional retail structure. It was noteworthy that these institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription.

Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

It is also noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. It is also significant to note that these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility. Remuneration to the pharmacies for these services is subject to the provisions of

those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Kentucky Medicaid via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous prescriptions dispensing. A pharmacy may mix and deliver many "dispensings" of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous prescriptions also dispense traditional prescriptions. The task of segregating intravenous and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous prescription services. In the current survey, the dispensing cost in the 11 responding pharmacies that dispensed a significant amount of intravenous prescriptions ranged from \$5.38 to \$36.70. The average (mean) dispensing cost was \$9.88, but it should be noted that this average is highly unstable.

One of the reasons it is difficult to determine a stable average dispensing cost for pharmacies that provide intravenous prescriptions is the low number of pharmacies for which data is collected in each survey. To better understand dispensing cost in these pharmacies, Myers and Stauffer performed an analysis of the dispensing cost from data collected on 136 surveys in recent years (inflation adjusted to calendar year 2001). Data for this analysis includes pharmacies in Kentucky, but was also supplemented by data from other states.

Although each of these pharmacies had indicated on the survey forms that they dispensed intravenous prescriptions, most of these pharmacies also dispensed traditional prescriptions as well. After calculating a cost of dispensing for each pharmacy, statistical regression techniques were used in an attempt to isolate the costs associated strictly with the dispensing of intravenous prescriptions.

Although the analysis should not be considered comprehensive, the data suggests that dispensing costs ranging from \$15 to \$30 per prescription would be considered typical. In addition to variable states of efficiency in these pharmacies, it should be noted that there are various levels of complexity associated with dispensing intravenous prescriptions. A pharmacy's utilization mix of dispensing various types of intravenous prescriptions can have a significant effect on dispensing cost. It is therefore possible that some pharmacies could very well have dispensing costs in excess of \$30 per prescription.

Under current policies, the Kentucky Department for Medicaid Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions. Although dispensing costs at intravenous pharmacies is well in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. In fact, the average Medicaid reimbursement per brand-name drug prescription on intravenous drugs was approximately \$700.¹³ Based on the results of the acquisition cost study performed simultaneously with the dispensing cost survey and the assumption of the Department's current ingredient reimbursement formula of AWP minus 10%, it is estimated that such an average prescription would yield a margin on ingredients of approximately \$55. **This margin allows for more than adequate reimbursement of the pharmacy's dispensing cost. So long as the ingredient reimbursement rate remains at AWP minus 10%, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.**

In recent years, some states have dealt with the issue of intravenous prescription reimbursement rates *in light of reduced ingredient reimbursement*. For example, the state of Utah recently adopted "revised AWP's" for certain products based on the recommendations of the United States Department of Justice and the National Association of Medicaid Fraud Control Units (NAMFCU).¹⁴ Products with these "revised AWP's" were primarily injectable, infusion, and inhalation drugs. Subsequent to the adoption of these prices, intravenous pharmacies alleged that the margins on ingredient reimbursement were no longer sufficient such that they could accept the typical Medicaid dispensing fee. As a result of

¹³ Based on an analysis of Kentucky Medicaid drug utilization for calendar year 2000.

¹⁴ "Medicaid's Use of Revised Average Wholesale Price." Department of Health and Human Services, Office of the Inspector General, OEI-03-01-00010, September 2001.

these allegations, the state of Utah created alternate dispensing fees primarily for home infusion pharmacies. The rates were set through a negotiated process and varied based on the perceived level of input costs required to fill the prescription. Table D.1 shows the various dispensing fee categories created by Utah Medicaid.

Table D.1 Utah Medicaid Home Infusion Drug Categories¹⁵

Dispensing Fee Category	Level of Service	Current Dispensing Fee
Category 'B' or 'C'	Traditional: technician input point-of-sale; pharmacist input; fixed overhead costs	\$3.90 or \$4.40
Category 'J'	Dispensing fee B or C plus: Labor II factor; clinical monitoring; prefilled syringes/PB; horizontal hood; technician input	\$8.90
Category 'K'	Dispensing fee J plus: Clinical monitoring; quality assurance; labor factor	\$18.90
Category 'L'	Dispensing fee K plus: Replacement into individual doses such as syringe; recalculations from vial to syringe to bag; large bulk inventory costs; peer review	\$22.90
Category 'M'	Dispensing fee L plus: Double gloves; gown; vertical hood; labor factor V; OSHA documentation; special handling; special storage; clean room; hazardous waste	\$33.90

The Utah Medicaid home infusion dispensing fee methodology has the advantage that dispensing fee reimbursement is more closely tied to actual dispensing costs. It has the disadvantage that it necessitates increased complexity for the claims adjudication process. It is noteworthy to emphasize that the Utah rates were established based on a negotiated process rather than being based on a survey of actual costs and that the rates were created only because of significant cuts in ingredient reimbursement such that the margin on ingredients was reduced.

¹⁵ Derived from Utah Medicaid State Plan Amendment documents and discussions with Utah Medicaid officials.

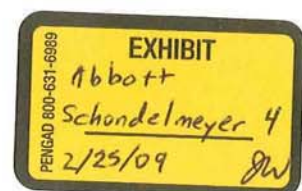
EXHIBIT 107

Study of Medi-Cal Pharmacy Reimbursement

Prepared for the
California Department of Health Services

June 2002


Myers and Stauffer_{LC}
Certified Public Accountants



Appendix D. Dispensing Cost Issues for Institutional, Intravenous, Home Infusion and Compounding Pharmacies

Based on previous experience performing dispensing cost studies, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities, pharmacies that dispense intravenous or home infusion prescriptions, and pharmacies that provide specialty prescription compounding services. This appendix includes a discussion of issues specific to these pharmacy types.

Institutional Pharmacies

The survey data supported the conclusion that there was not a statistically significant difference in dispensing cost for pharmacies that primarily serviced long-term care facilities versus pharmacies with a more traditional retail structure. It was noteworthy that these institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription.

Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

It is also noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. It is also significant to note that these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility.

Remuneration to the pharmacies for these services is subject to the provisions of those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Medi-Cal via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous and Home Infusion Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous or home infusion prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous prescriptions dispensing. A pharmacy may mix and deliver many “dispensings” of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous prescriptions also dispense traditional prescriptions. The task of segregating intravenous and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous prescription services. In the current survey, the dispensing cost in the 34 responding pharmacies that dispensed a significant amount of intravenous prescriptions ranged from \$8.04 to \$71.37. The average (mean) dispensing cost was \$32.97, but it should be noted that this average is highly unstable (i.e. there was a very high standard deviation).

One of the reasons it is difficult to determine a stable average dispensing cost for pharmacies that provide intravenous prescriptions is the low number of pharmacies for which data is collected in each survey. To better understand dispensing cost in these pharmacies, Myers and Stauffer performed an analysis

of the dispensing cost from data collected on over 100 surveys in recent years (inflation adjusted to calendar year 2002). Data for this analysis includes pharmacies in California, but was also supplemented by data from other states. Although each of these pharmacies had indicated on the survey forms that they dispensed intravenous prescriptions, most of these pharmacies also dispensed traditional prescriptions as well. After calculating a cost of dispensing for each pharmacy, statistical regression techniques were used in an attempt to isolate the costs associated strictly with the dispensing of intravenous prescriptions.

Although the analysis should not be considered comprehensive, the data suggests that dispensing costs ranging from \$20 to \$40 per intravenous prescription would be considered typical. In addition to variable states of efficiency in these pharmacies, it should be noted that there are various levels of complexity associated with dispensing intravenous prescriptions. A pharmacy's utilization mix of dispensing various types of intravenous prescriptions can have a significant effect on dispensing cost. It is therefore possible that some pharmacies could very well have dispensing costs in excess of \$40 per prescription.

Under current policies, the California Department of Health Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions (plus some additional compounding, container, and sterility fees). Although dispensing costs at intravenous pharmacies appears to be in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. The average Medi-Cal reimbursement per single source drug prescription on intravenous drugs is approximately \$350.²⁴ Based on the results of the acquisition cost study performed simultaneously with the dispensing cost survey and the assumption of the Department's current ingredient reimbursement formula of AWP minus 5%, it is estimated that such an average prescription would yield a margin on ingredients of approximately \$42. **This margin typically allows for adequate reimbursement of the pharmacy's dispensing cost. So long as the ingredient reimbursement rate remains at AWP minus 5% or any other relatively "high" level, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.**

In recent years, some states have dealt with the issue of intravenous prescription reimbursement rates *in light of reduced ingredient reimbursement*. For example, the state of Utah recently adopted "revised AWP's" for certain products based on the recommendations of the United States Department of Justice and the

²⁴ Based on an analysis of California Medi-Cal drug utilization for calendar year 2000.

National Association of Medicaid Fraud Control Units (NAMFCU).²⁵ Products with these "revised AWP" were primarily injectable, infusion, and inhalation drugs. Subsequent to the adoption of these prices, intravenous and home infusion pharmacies alleged that the margins on ingredient reimbursement were no longer sufficient such that they could accept the typical Medicaid dispensing fee. As a result of these allegations, the state of Utah created alternate dispensing fees primarily for home infusion pharmacies. The rates were set through a negotiated process and varied based on the perceived level of input costs required to fill the prescription. Table D.1 shows the various dispensing fee categories created by Utah Medicaid.

Table D.1 Utah Medicaid Home Infusion Drug Categories²⁶

Dispensing Fee Category	Level of Service	Current Dispensing Fee
Category 'B' or 'C'	Traditional: technician input point-of-sale; pharmacist input; fixed overhead costs	\$3.90 or \$4.40
Category 'J'	Dispensing fee B or C plus: Labor II factor; clinical monitoring; prefilled syringes/PB; horizontal hood; technician input	\$8.90
Category 'K'	Dispensing fee J plus: Clinical monitoring; quality assurance; labor factor	\$18.90
Category 'L'	Dispensing fee K plus: Replacement into individual doses such as syringe; recalculations from vial to syringe to bag; large bulk inventory costs; peer review	\$22.90
Category 'M'	Dispensing fee L plus: Double gloves; gown; vertical hood; labor factor V; OSHA documentation; special handling; special storage; clean room; hazardous waste	\$33.90

The Utah Medicaid home infusion dispensing fee methodology has the advantage that dispensing fee reimbursement is more closely tied to actual

²⁵ "Medicaid's Use of Revised Average Wholesale Price." Department of Health and Human Services, Office of the Inspector General, OEI-03-01-00010, September 2001.

²⁶ Derived from Utah Medicaid State Plan Amendment documents and discussions with Utah Medicaid officials.

dispensing costs. It has the disadvantage that it necessitates increased complexity for the claims adjudication process. It is noteworthy to emphasize that the Utah rates were established based on a negotiated process rather than being based on a survey of actual costs and that the rates were created only because of significant cuts in ingredient reimbursement such that the margin on ingredients was reduced.

Compounding Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling compounded prescriptions. Survey data indicated that this practice was associated with statistically significant higher dispensing costs.

The observation that the practice of compounding prescriptions resulted in higher dispensing cost is not surprising given the special labor and equipment needs that are required in this type of pharmacy practice. Preparation time for individual compounded prescriptions, though highly variable depending upon the specific task, tend to be higher than the time associated with filling "traditional" prescriptions in pre-manufactured tablet, capsule, or liquid (etc.) forms. Additionally, the practice of pharmacy compounding does require some additional expensive equipment such as clean rooms for sterile preparation, sensitive scales, and other equipment for making special pharmaceutical dosage forms.

The practice of pharmaceutical compounding has proven to be somewhat controversial given the perception of a fine line between "compounding" and "manufacturing". The U.S. Food and Drug Administration has imposed some limits relating to the practice and advertising of compounding services.

Despite these restrictions, the practice of compounding is appealing to many pharmacists, not only because the practice is perceived to be a return to a historical form of pharmacy practice, but also because compounding is a niche business, which, if successful, can yield high margins. In part, these high margins are due to the promotion of compounding services primarily to cash customers, often in more affluent areas. In some aspects, pharmacy compounding appeals to those seeking "alternative" forms of medical treatments and provides traditional medications in non-traditional forms or in a form free of dyes or other perceived allergens.

Compounding pharmacies have made only minimal attempts to promote wide acceptance of third-party coverage for compounded pharmaceuticals. Primarily, this appears to be related to a desire to avoid reimbursement limitations that could be imposed by a broad acceptance of third party reimbursement plans and fee schedules based primarily on ingredient cost. Compounding pharmacists seem to prefer to maintain the relatively high margins and billing simplicity associated with cash-paying customers. Additionally, because of the potential for billing complexities associated with compounded prescriptions (which sometimes

cannot be captured with ease using typical pharmacy claim forms), pharmacies have experienced difficulty in establishing acceptable standards for transmitting suitable claims data that is compatible with the electronic claims processing standards used by most third party payers.

Due to the apparent variability in the cost associated with dispensing compounded prescriptions, a single dispensing fee for compounded prescriptions may be less ideal for matching reimbursement with actual costs incurred. The primary variable that determines dispensing cost incurred by a pharmacy is the amount of professional time required to prepare a particular compounded prescription. A more limited amount of cost variability can be attributed to the special equipment needs of certain preparations. To determine the precise mix of cost inputs into the various types of compounded prescriptions would require some type of time and motion study, the cost of which may be unjustified given the relatively small volume that would be associated with compounded prescription volume.


Given these limitations, a negotiated fee or set of fees is likely to be a preferable means of setting rates for compounding services. Such a fee could be linked to specific types of prescriptions or could be linked to professional time expended with reasonable upper limits. The inclusion of certain compounding services under prior authorization protocols to determine medical necessity may also be appropriate if modifications to dispensing fees for compounding services are considered.

EXHIBIT 108

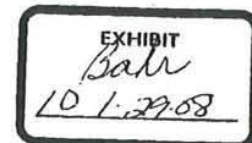
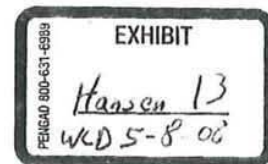
Survey of Dispensing and Acquisition Costs of Pharmaceuticals in the Commonwealth of Kentucky



October 2003


Myers and Stauffer LLC

Certified Public Accountants



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Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the following tables and paragraphs. Findings for all pharmacies in the sample are presented collectively, and additionally are presented for subsets of the sample based on pharmacy characteristics. There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Findings are presented in the forms of means and medians, both raw and weighted.

In many real world settings such as this dispensing cost survey, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies.

Medians are sometimes preferred to averages (i.e., the arithmetic mean) in situations where the magnitude of outlier values results in an average that does not represent what is thought of as "average" or normal in the common sense.

For all pharmacies in the sample, findings are presented in Table 3.2.

Different Measures of Central Tendency:

Unweighted mean: the arithmetic average cost for all pharmacies.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacies as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighing factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: This is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

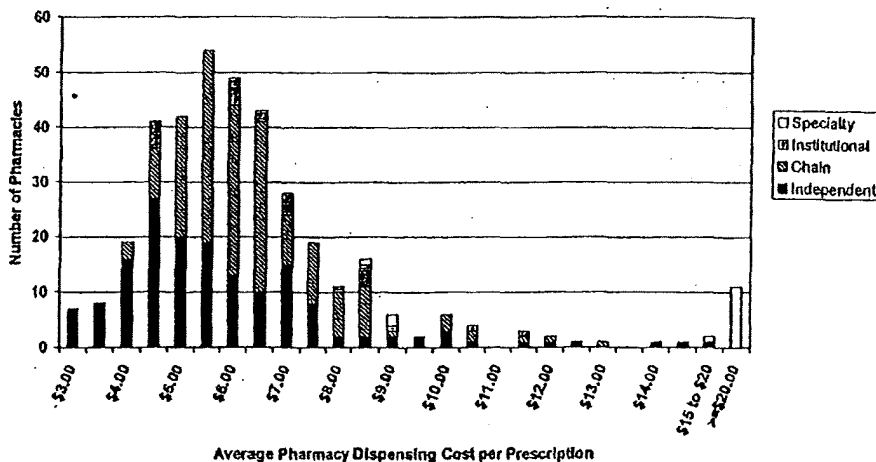
Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$8.13
Average (Mean) Weighted by Medicaid Volume	\$6.05
Unweighted Median	\$6.15
Median Weighted by Medicaid Volume	\$5.75

(Dispensing Costs have been inflated to the common point of June 30, 2003)

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest, \$122.75, and lowest, \$3.02, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (68%), however, had dispensing costs between \$4.50 and \$7.50.

Chart 3.2 Dispensing Cost by Pharmacy

Several pharmacies included in the cost analysis were identified as specialty pharmacies that dispensed a significant proportion of "non-traditional" prescriptions. The most common characteristic of these specialty pharmacies was the dispensing of intravenous (I.V.) solutions and infusion products, however other specialties included the provision of inhalation therapy drugs, and special biotech injectable preparations. These characteristics, especially the provision of intravenous and infusion products had a significant impact on pharmacy dispensing cost. The analysis revealed significantly higher cost of dispensing associated with the 15 pharmacies in the sample that provided significant levels of these services.

In every pharmacy dispensing study where information on I.V. solution and infusion product dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing these services indicate that the activities and costs involved in filling I.V. and infusion prescriptions are significantly different from the costs incurred by the typical retail (or institutional) pharmacy. The reasons for this difference include:

- Costs of special equipment for mixing and storage of I.V. solutions and infusion products.
- Higher direct labor costs because most I.V. prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non-I.V. prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- A pharmacy may mix and deliver many "dispensings" of a daily I.V. or infusion solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

The difference in dispensing costs that were observed for providers of specialty services compared to those pharmacies that did not offer these specialty services is summarized in Table 3.3.

Table 3.3 Cost Per Prescription - Specialty Versus Other Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Average (Mean) Cost	Standard Deviation
Specialty Pharmacies (e.g., I.V. or infusion)	15	\$49.81	\$33.85
Other Pharmacies	362	\$6.40	\$1.88

(Dispensing costs have been inflated to the common point of June 30, 2003)

Pharmacies that dispense specialty prescriptions as a significant part of their business can have dispensing costs far in excess of those found in a traditional pharmacy. Based on the cost findings, it must be concluded that the costs incurred to dispense specialty prescriptions are not representative of the costs incurred by a traditional pharmacy. If the costs of specialty services were to be included in the computation of an average or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 95% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing specialty services, the

marginal increase in the fee would be immaterial in relation to the cost of actually dispensing a specialty prescription.⁸

Consequently, many of the analyses that follow exclude the specialty pharmacy providers. In making this exclusion, no representation is made that the cost structure of those pharmacies is not important to understand. However, it is reasonable to address issues relevant to those pharmacies in isolation from the analysis of the cost structure of the vast majority of Kentucky Medicaid pharmacy providers that provide "traditional" pharmacy services. Additional comments regarding pharmacies that dispense I.V. and infusion prescriptions is included later in this chapter.

Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of specialty prescriptions.

Table 3.4 Cost Per Prescription – Excluding Specialty Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$6.40
Average (Mean) Weighted by Medicaid Volume	\$5.86
Unweighted Median	\$6.04
Median Weighted by Medicaid Volume	\$5.72

(Dispensing costs have been inflated to the common point of June 30, 2003)

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

- Total prescription volume
- Provision of prescription drugs to residents of long-term care facilities
- Chain versus independent pharmacy affiliation
- Urban versus rural pharmacy location
- Type of pharmacy ownership
- Total Medicaid volume
- Medicaid volume as a percent of total volume
- Provision of unit dose dispensing services

⁸ Although typical dispensing fees reimburse less than the dispensing costs of I.V. and infusion pharmacies, they are generally able to cover dispensing costs in the margin allowed on ingredient cost reimbursement.

One way to determine the statistical significance of differences in dispensing cost between the pharmacies classified by the above referenced characteristics is through the use of a *t*-test. The sample data may show that a certain group of pharmacies has a sample mean lower or higher than another group. Recognizing that the data only represents a sample, a *t*-test is a statistical technique that seeks to determine if the findings are strong enough that a similar relationship can be expected to exist for the entire population. The *t*-test takes into consideration the sample's size, mean, and underlying variance (as measured by the standard deviation). Although the preference of using a weighted median as a measurement of central tendency was previously explained, a *t*-test requires the comparison of the *unweighted average (mean)* costs.

Exhibit 12 provides additional statistical measures including the standard error of the mean and confidence intervals. Confidence intervals given in Exhibit 12 were calculated using appropriate statistics from the *t* distribution at the 95% confidence level. These intervals are a range estimate for the population mean, and are based upon the sample mean, standard deviation, and sample size. A 95% confidence interval identifies the range which one would expect the mean from any sample to fall 95% of the time. It can be inferred that there is a 95% probability that the population mean lies within the range of the confidence interval.

All costs referred to in these analyses have been inflation adjusted to the common point of June 30, 2003.

1) Total Prescription Volume

Pharmacies were classified into meaningful groups based upon their differences in total prescription volume. Dispensing costs were then analyzed based upon these volume classifications.

Table 3.5 Pharmacy Total Annual Prescription Volume

Total Annual Prescription Volume of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost
0 to 49,999	133	\$7.53	\$2.29
50,000 to 99,999	152	\$5.92	\$1.24
100,000 and Higher	77	\$5.42	\$1.00

There is a significant correlation between a pharmacy's total prescription volume and the dispensing cost per prescription. For all categories noted above, differences in the average (mean) dispensing cost were statistically significant (at the 5% level of significance). This result is not surprising because many of the costs associated with any business, included the dispensing of prescriptions, are fixed in nature, and do not vary significantly with increased volume. For stores

with a higher total prescription volume, these fixed costs are spread over a greater number of prescriptions resulting in lower costs per prescription. (A more detailed analysis of cost variations attributable to total prescription volume using statistical regression techniques is presented later in the report.)

2) Retail Versus Institutional Pharmacies

Pharmacies were classified by whether or not they provided a significant number of prescriptions to residents of long-term care facilities (based on analysis of Medicaid claims history and self-reported measurements on the dispensing cost survey).

Table 3.6 Retail Versus Institutional Pharmacies

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Retail	338	\$6.35	\$1.87	68,320
Institutional	24	\$7.18	\$1.94	199,552

The difference in the unweighted sample averages (means) observed here was found to be statistically significant. Institutional pharmacies displayed higher dispensing costs despite the efficiencies associated with having higher total prescription volume. In particular, higher costs associated with specialized equipment and prescription delivery services contributed to the overall higher cost of dispensing. Additional comments regarding institutional pharmacies are included later in this chapter.

3) Chain Versus Independent Pharmacy Affiliation (Retail only)

Of the 338 non-specialty retail pharmacies, 161 were independent pharmacies and 177 were chain pharmacies.

Table 3.7 Chain Versus Independent Pharmacies (Retail Only)

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Independent	161	\$6.07	\$2.18	60,983
Chain	177	\$6.61	\$1.49	74,995

The use of a *t*-test indicates that the difference in the unweighted averages (means) is statistically significant (at the 5% level of significance). Despite the higher average total prescription volume in chain pharmacies, their dispensing costs were higher than that observed in independent pharmacies. Higher labor costs for employee pharmacists were a major contributing factor to this phenomenon.

4) Urban Versus Rural Pharmacy Location

Myers and Stauffer used the zip code of each pharmacy to determine if it was located in a Metropolitan Statistical Area (MSA) as used by CMS. Those in an MSA were considered to be urban, and those not in an MSA were considered rural. Pharmacies which were located outside of the commonwealth of Kentucky were excluded from this analysis.

Table 3.8 Urban Versus Rural Pharmacy Location

Location of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Urban	133	\$6.70	\$1.93	88,386
Rural	214	\$6.17	\$1.73	64,764

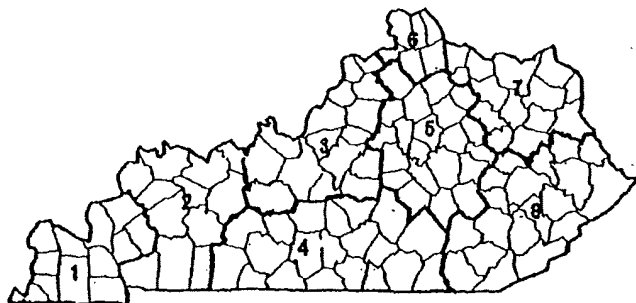
The use of a t-test indicates that the difference in the unweighted averages (means) is statistically significant (at the 5% level of significance).

As an additional analysis of pharmacy dispensing cost by location, pharmacies were grouped by Medicaid regions (see Table 3.9 and Chart 3.3).

Table 3.9 Dispensing Costs by Medicaid Region

Location of Pharmacy (Medicaid Region)	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Region 1	17	\$6.09	\$0.98	64,629
Region 2	46	\$6.45	\$1.81	68,963
Region 3	80	\$6.66	\$2.03	83,882
Region 4	46	\$6.57	\$2.43	60,462
Region 5	70	\$6.39	\$1.57	79,314
Region 6	12	\$6.92	\$2.01	67,871
Region 7	24	\$6.08	\$1.62	71,303
Region 8	52	\$5.77	\$1.35	72,585

Chart 3.3 Kentucky Medicaid Regions



Several of the differences observed in the regional breakdown of dispensing cost were statistically significant (at the 5% level of significance). Of particular note were the higher costs in regions 3 and 6 and lower costs in region 8. The regional analysis of cost variation appears to confirm the previously noted phenomenon of higher dispensing costs in the urban areas of Kentucky as compared to the rural areas. It is also noted that there is some variation in the average total prescription volume between the various regions.

5) Type of Pharmacy Ownership

Pharmacies reported their ownership as being one of the following:

- Sole proprietor
- Partnership
- Corporation

Table 3.10 Pharmacy Ownership

Ownership Structure of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Sole Proprietor	26	\$7.12	\$3.53	37,915
Partnership	10	\$5.57	\$1.32	143,943
Corporation	317	\$6.37	\$1.67	77,179

The majority, about 88%, of pharmacies had a corporate business structure. The dispensing costs of pharmacies owned as sole proprietorships was significantly higher than other types of pharmacies, however it is also noted that these pharmacies also tended to have lower total prescription volumes.

6) Total Medicaid Volume

Pharmacies were also classified based upon their Medicaid volume. Medicaid volume was supplied to Myers and Stauffer by the Department for Medicaid Services.

Table 3.11 Pharmacy Annual Medicaid Prescription Volume

Annual Medicaid Prescription Volume of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
0 to 4,999	114	\$7.41	\$2.22	50,614
5,000 to 14,999	145	\$6.24	\$1.55	66,179
15,000 and Higher	103	\$5.53	\$1.33	121,511

For the classifications shown, some differences in the average (mean) dispensing cost were found to be statistically significant (at the 5% level of significance). It should be noted, however, that there is a correlation between Medicaid volume and total prescription volume. The relationship noted with regard to Medicaid volume, is a function of total prescription volume rather than Medicaid volume alone.

7) Medicaid Volume as a Percent of Total Volume

A better measure of the effect of a provider's Medicaid volume was to use Medicaid volume as a percent of total volume. To facilitate this analysis, pharmacies were arrayed into meaningful classifications of Medicaid utilization.

Table 3.12 Pharmacy Medicaid Utilization Ratio

Medicaid Prescription Volume as a Percent of Total Volume	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
0.0% to 9.9%	130	\$6.72	\$1.82	79,495
10.0% to 29.9%	146	\$6.34	\$1.86	66,635
30.0% and Higher	86	\$6.03	\$1.95	90,913

The differences in the sample averages (means) shown in Table 3.12 for the high Medicaid utilization and the low Medicaid utilization groups were statistically significant (at the 5% level of significance). There was no trend observed that indicated that higher Medicaid utilization ratios contributed to higher costs of dispensing. In fact, just the opposite trend (i.e., lower dispensing cost associated with higher Medicaid utilization ratios) appeared to be present in the survey data.

8) Provision of Unit Dose Dispensing Services

Pharmacies were classified by whether or not they provided prescription drugs in unit dose packaging.

Table 3.13 Provision of Unit Dose Prescription Services

Type of Pharmacy	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Provides Unit Dose Services	62	\$6.51	\$2.00	119,425
Does Not Provide Unit Dose Services	300	\$6.38	\$1.86	68,257

The differences in the unweighted sample averages (means) observed here were not statistically significant.

9) Combinations of Significant Attributes

Previously, it was noted that all of the following factors were associated with significantly higher dispensing costs (in addition to total prescription volume):

- Institutional pharmacies (as compared to retail pharmacies)
- Chain pharmacies (as compared to independent pharmacies)
- Urban pharmacies (as compared to rural pharmacies)

Table 3.14 presents measurements associated with various combinations of the above pharmacy characteristics.

Table 3.14 Grouped by Institutional vs. Retail Status, Affiliation and Location

Pharmacy Group	Number of Stores	Unweighted Average (Mean) Cost	Standard Deviation of Cost	Average Annual Total Prescription Volume
Rural Independent	114	\$5.95	\$1.99	61,099
Urban Independent	41	\$6.41	\$2.63	60,048
Rural Chain	89	\$6.38	\$1.25	70,980
Urban Chain	83	\$6.78	\$1.55	80,392
Rural Institutional	11	\$6.82	\$1.97	52,453
Urban Institutional	9	\$7.20	\$1.40	291,207

Multivariate Analysis

The analyses described above tested for significant differences in cost by analyzing one pharmacy attribute at a time. A more sophisticated method to analyze the impact of pharmacy characteristics upon dispensing cost is to use a stepwise multivariate regression analysis. In such an analysis, it is possible to control for factors known to affect dispensing cost, such as total prescription volume, and determine if other factors have a significant impact on dispensing cost. It is possible for an attribute to be not statistically significant in a *t*-test, but still be shown to have some effect on dispensing cost in a multivariate analysis (or vice versa).

Several analyses were conducted to identify potential correlation between pharmacy dispensing cost and certain pharmacy traits. This approach allows for a more robust analysis than can be achieved by *t*-tests alone to determine the potential influence of pharmacy characteristics on dispensing cost. The traits that were used in the analysis included:

- Prescription sales volume
- Prescription sales ratio
- Type of location
- Unit dose delivery systems
- Delivery service
- Level and percent of Medicaid volume
- Total prescription volume
- Type of ownership
- Pharmacy building ownership
- Geographic location
- Provision of I.V. or infusion services
- Hours open
- Length of operation at location
- Percent of prescriptions dispensed paid by third party payers
- Type of affiliation

The attributes which proved to be the most significant were:

- Total prescription volume
- Provision of I.V. or infusion services

- Provision of delivery service
- Chain affiliation status

The relationship between total prescription volume and dispensing cost was especially pronounced. A linear model to predict total prescription dispensing costs based on prescription volume alone was able to explain over 80% of the variation in dispensing costs in retail pharmacies. Linear regression methods indicate that the regression equation which best describes the relationship of total prescription volume and total dispensing cost in retail pharmacies is:

$$\text{Total Costs (inflated)} = \$84,415 + \$4.60x (\text{Total Prescription Volume})^9$$

Chart 3.4 Relationship Between Total Costs and Total Prescription Volume (Retail Pharmacies)

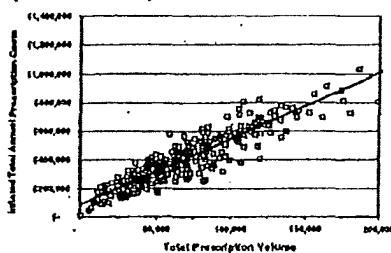
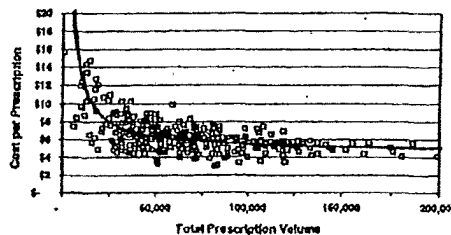


Chart 3.5 Relationship Between Cost per Prescription and Total Prescription Volume (Retail Pharmacies)



In this simplified model of pharmacy dispensing cost, there is the implication that there are fixed costs of \$84,415 and variable costs of \$4.60 per prescription associated with the "typical" pharmacy. The average total prescription volume for retail pharmacies was approximately 68,300. For such a pharmacy, total prescription costs predicted by the equation are \$398,595, or \$5.84 per prescription. Clearly, for pharmacies with a high total prescription volume, fixed costs per prescription decrease. Conversely, low volume pharmacies have greater fixed costs per prescription (see Charts 3.4 and 3.5).

No other attribute contributed more than 2% to the predictive power of the linear regression techniques after controlling for the variation of total prescription volume.

⁹ Retail pharmacies only. The regression equation shown above was produced using an iterative regression technique that excluded some statistical outliers that would have had the effect of distorting the regression equation.

Adjustments to Compensate for Survey Bias

Previously it was noted that the total number of pharmacies used in this analysis of dispensing costs was slightly biased toward the inclusion of chain pharmacies. Furthermore, it is noted that the proportion of institutional pharmacies that submitted dispensing cost surveys was higher than the incidence of institutional pharmacies in the total population of Medicaid participating pharmacies. No bias was observed with regard to the urban versus rural location of pharmacies.

This observed survey bias becomes significant given that statistically significant differences in dispensing cost have been observed for these various subsets of pharmacies. This means that the overall average dispensing cost is slightly skewed toward the cost of the pharmacies over-represented in the final analysis sample. To compensate for bias, an adjusted average dispensing cost was calculated, as demonstrated in Table 3.15.

Table 3.15 Calculation of Adjusted Average Dispensing Cost

Pharmacy Type	Stores in Kentucky Medicaid Pharmacy Population	Average Medicaid Prescription Volume	Percent of Total Medicaid Volume	Average Dispensing Cost Observed in Sample (Weighted by Medicaid Volume)	Contribution to Composite Average for all Stores
Independent	692	11,762	53.5%	\$5.28	\$2.82
Chain	512	8,633	29.1%	\$6.11	\$1.78
Institutional	53	50,076	17.4%	\$6.64	\$1.16
Total	1,257	12,103(Avg)	100%	\$5.86 (Avg)	\$5.76

These calculations yield an estimated average dispensing cost (weighted by Medicaid volume) of \$5.76. In theory, had the survey response rate better matched the proportions that these pharmacy types exist in the entire pharmacy provider population, the overall average (mean, weighted by Medicaid volume) dispensing cost would have been approximately \$5.76 for all non-specialty pharmacies.

Dispensing Cost Issues for Institutional and Specialty Pharmacies

Based on previous experience performing dispensing cost studies for the Commonwealth of Kentucky, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities and pharmacies that dispense specialty prescriptions including intravenous and infusion services.

Institutional Pharmacies

Institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription. Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

The survey instrument used in the study of pharmacy dispensing cost was designed such that costs associated with the dispensing of unit dose prescriptions were appropriately captured and included in the dispensing cost analysis. For a variety of reasons relating to patient safety, convenience and ability for returns, dispensing drugs in unit dose packaging is often preferable, or even contractually required, for institutional pharmacies to dispense to nursing facility residents. Unit dose prescriptions can either be purchased in pre-packaged unit dose forms from the drug manufacturer, but most often is packaged into unit dose forms within the pharmacy. The additional cost associated with unit dose packaging (as opposed to traditional packaging) is reflected in building, equipment, supplies and labor expenses.

It is noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. However, these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility. Remuneration to the

pharmacies for these services is subject to the provisions of those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Kentucky Medicaid via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous and Infusion Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous or infusion prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous or infusion services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous or infusion prescriptions dispensed. A pharmacy may mix and deliver many "dispensings" of a daily intravenous or infusion solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous or infusion prescriptions also dispense traditional prescriptions. The task of segregating intravenous/infusion and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous or infusion prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous or infusion prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous or infusion prescription services. In the current survey, the dispensing cost at the 10 responding pharmacies that dispensed a significant amount of intravenous or infusion prescriptions ranged from \$8.92 to almost \$80. The average (mean) dispensing cost was approximately \$43, but it should be noted that this average is highly unstable (standard deviation of approximately \$28).

Under current policies, the Kentucky Department for Medicaid Services reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions. Although

dispensing costs at intravenous pharmacies is well in excess of the current dispensing fee, this reimbursement methodology has been accepted by these pharmacies because the margin on ingredient reimbursement has allowed pharmacies to offset any shortfall from the dispensing fee. In the case of intravenous prescriptions, the typical ingredient reimbursement per prescription is much higher than for traditional retail prescriptions. Margins realized on the ingredient portion of reimbursement have traditionally been sufficient to subsidize the difference between dispensing costs and dispensing reimbursement. So long as the ingredient reimbursement rate remains at AWP minus 12%, the need for the Department to set a separate dispensing fee for intravenous drugs is somewhat mitigated by the margins realized on ingredient reimbursement.

Other Dispensing Cost Issues

Components of Cost

The dispensing costs of the surveyed pharmacies were broken down into the various components of overhead and labor related costs. Table 3.16 and Charts 3.6 through 3.8 display the various cost components of the mean costs for pharmacies in the sample. Mean costs shown are weighted by Medicaid prescription volume.

Expenses were classified as follows:

- Owner professional labor – owner's labor costs were subject to constraints in recognition of its special circumstances as previously noted.
- Employee professional labor consists of employee pharmacists. Other labor includes the cost of delivery persons, interns, technicians, clerks and any other employee with time spent performing the prescription function of the pharmacy.
- Building and equipment expense includes depreciation, rent, ownership costs, repairs, utilities and any other expenses related to building and equipment.
- Prescription-specific expense includes pharmacist-related dues and subscriptions, prescription containers and labels, prescription-specific computer expenses, prescription-specific delivery expenses (other than direct labor costs), continuing education, and any other expenses that are unique to the prescription dispensing business.
- Other business expenses consist of all other expenses that were allocated to the prescription dispensing function of the pharmacy including interest, insurance, telephone, and legal and professional fees.

EXHIBIT 109



Sep 24 2008
1:21PM

A Survey of Dispensing Costs of Pharmaceuticals in the State of Kansas

Prepared for the

Kansas Department of Social and
Rehabilitation Services

September 1999



Myers and Stauffer_{LC}

Certified Public Accountants

percent pharmacy labor (obviously, some labor must be devoted to generating the 25 percent nonprescription sales).

To determine the maximum percentage of total labor allowed, the following calculation was made:

$$\frac{0.3(\text{Sales Ratio})}{0.1 + (0.2)(\text{Sales Ratio})}$$

Inflation Factors

All allocated costs for overhead and labor were totaled and multiplied by an inflation factor. Inflation factors are intended to reflect cost changes from the middle of the reporting period of a particular pharmacy to a common fiscal period ending December 31, 1999 (specifically from the midpoint of the pharmacy's fiscal year to the midpoint of the common fiscal period, June 30, 1999). The midpoint and terminal month indices used were taken from the U. S. Government Consumer Price Index (CPI), Urban Consumer (see Exhibit 10).

The use of inflation factors is necessary in order for pharmacy cost data from various fiscal years to be compared uniformly. Recent experience with pharmacy cost studies has indicated that the CPI may tend to overstate increases in dispensing cost over an extended time. This appears to be the result of increased cost containment pressures exerted on retail pharmacies by reduced reimbursement from managed care entities.

Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the tables and paragraphs following. We present the findings for all pharmacies in the sample collectively, and also for subsets of the sample based on pharmacy characteristics.

There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Our findings are presented in the forms of means and medians, both raw and weighted.

In many real world settings such as this dispensing cost survey, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies. Medians are often preferred to averages in situations where the magnitude of outlier values results in an arithmetic average that does not represent what we think of as "average" or normal in the common sense. The measurement that is the most ideally suited for determining the typical cost of dispensing prescriptions to Medicaid recipients is the **median weighted by Medicaid volume**.

For all pharmacies in the sample, our findings are presented in Table 3.2.

Different Measures of Central Tendency:

Unweighted mean: simply the average cost for each pharmacy.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacy as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: This is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

Table 3.2 Cost Per Prescription – All Pharmacies

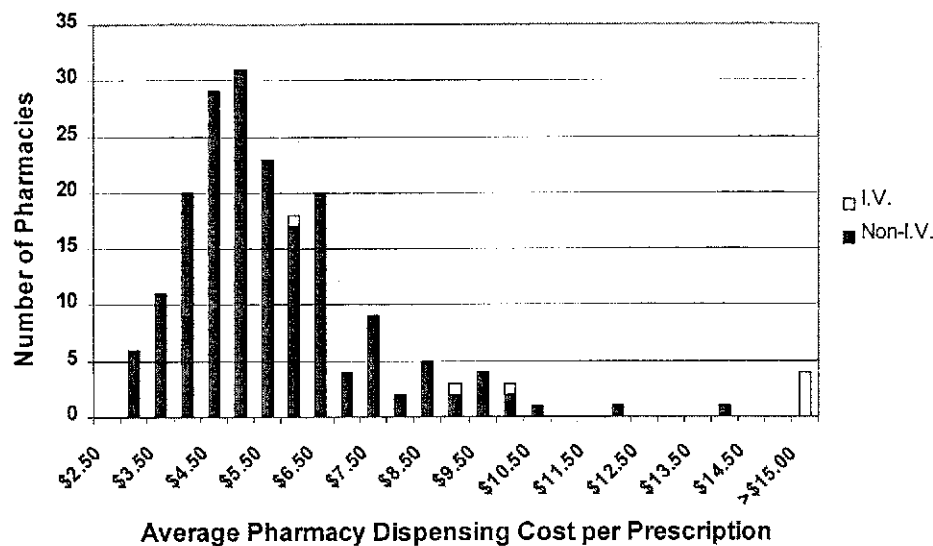
	Dispensing Cost
Median Weighted by Medicaid Volume	\$5.53
Median Weighted by Total Volume	\$5.19
Unweighted Median	\$5.61
Mean Weighted by Medicaid Volume	\$8.10
Mean Weighted by Total Volume	\$5.94
Unweighted Mean	\$7.47

(Dispensing Costs have been inflated to the common point of June 30, 1999)

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large disparity between the highest, \$151.12, and lowest, \$3.17, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (121), however, had dispensing costs in the range of \$4.00 to \$6.00.

The most significant characteristic which affected pharmacy dispensing cost was the provision of intravenous (I.V.) solutions. Our analysis revealed significantly

Chart 3.2
Dispensing Cost by Pharmacy



higher costs of dispensing is associated with the 7 pharmacies in the sample that provided this service.

In every pharmacy dispensing study where information on I.V. solution dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing I.V. solutions indicate that the activities and costs involved in filling I.V. prescriptions are significantly different from the costs incurred by the typical retail (or long term care) pharmacy. The reasons for this difference include:

- costs of special equipment for mixing and storage of I.V. solutions;
- higher direct labor costs because most I.V. prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non-I.V. prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label; and
- a pharmacy may mix and deliver many "dispensings" of a daily I.V. solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

The differences in dispensing costs which were observed for providers of I.V. services compared to those pharmacies which did not offer I.V. services are summarized in Table 3.3.

Table 3.3 Cost Per Prescription - I.V. Versus non I.V. Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Mean Cost	Standard Deviation	Mean Cost Weighted by Total Volume
Pharmacies Dispensing I.V. Prescriptions	7	\$48.93	\$51.72	\$27.42
Pharmacies Not Dispensing I.V. Prescriptions	188	\$5.93	\$1.75	\$5.45

(Dispensing Costs have been inflated to the common point of June 30, 1999)

Based on our cost findings, it must be concluded that the costs incurred to dispense I.V. prescriptions are not representative of the costs incurred by a general pharmacy. If the costs of I.V. services were to be included in the computation of an average or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 96% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing I.V. services, the marginal increase in the fee would be immaterial in relation to the cost of actually dispensing an I.V. prescription.⁹ Consequently, many of the analyses which follow, exclude these providers which had dispensed I.V. prescriptions. Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed I.V. prescriptions.

Table 3.4 Cost Per Prescription – Excluding I.V. Pharmacies

	Dispensing Cost
Median Weighted by Medicaid Volume	\$5.42
Median Weighted by Total Volume	\$5.17
Unweighted Median	\$5.56
Mean Weighted by Medicaid Volume	\$5.64
Mean Weighted by Total Volume	\$5.45
Unweighted Mean	\$5.93

(Dispensing Costs have been inflated to the common point of June 30, 1999)

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

⁹ Although typical dispensing fees reimburse less than the dispensing costs of I.V. pharmacies, they are generally able to break even based on the margin allowed on ingredient cost reimbursement.

- Chain versus independent pharmacy affiliation.
- Pharmacy location.
- Type of pharmacy ownership.
- Total prescription volume.
- Total Medicaid volume.
- Medicaid volume as a percent of total volume.
- Provision of unit dose dispensing services.
- Provision of mail order and Internet services.

For reasons previously described, these analyses are limited to those pharmacies that did not provide I.V. services. All costs referred to in these analyses have been inflation adjusted to the common point of June 30, 1999.

One way to determine the statistical significance of differences in dispensing cost between the pharmacies classified by the above referenced characteristics is through the use of a *t*-test. The sample data may show that a certain group of pharmacies has a sample mean lower or higher than another group. Recognizing that the data only represents a sample, a *t*-test is a statistical technique that seeks to determine if the findings are strong enough that a similar relationship can be expected to exist for the entire population. The *t*-test takes into consideration the sample's size, mean, and underlying variance. Although the preference of using a weighted median as a measurement of central tendency was previously explained, a *t*-test requires the comparison of the *unweighted mean costs*.

1) Chain Versus Independent Pharmacy Affiliation

Of the 188 pharmacies in the sample that did not dispense I.V. prescriptions, 111 were independent pharmacies and 77 were chain pharmacies.

Table 3.5 Chain Versus Independent Pharmacies

Type of Pharmacy	Number of Stores	Unweighted Mean Cost	Standard Deviation of Cost	Median Weighted by Medicaid Volume
Independent	111	\$5.94	\$1.49	\$5.55
Chain	77	\$5.91	\$2.08	\$5.17

The use of a *t*-test indicates that the difference in the raw means is not statistically significant (at the 5% level of significance). This means that there is insufficient evidence in the *sample* data to support the contention that there is a chain versus independent dispensing cost differential for the population of *all* chain and independent pharmacies.

EXHIBIT 110



Sep 24 2008
1:13PM

A Survey of Dispensing Costs of Pharmaceuticals in the State of Arkansas

Prepared for the
Arkansas Department of Human Services

June 2001



cost studies has indicated that the CPI may tend to overstate increases in dispensing cost over an extended time. This appears to be the result of increased cost containment pressures exerted on retail pharmacies by reduced reimbursement from managed care entities.

Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the tables and paragraphs following. Findings for all pharmacies in the sample are presented collectively, and additionally are presented for subsets of the sample based on pharmacy characteristics. There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Findings are presented in the forms of means and medians, both raw and weighted.

In many real world settings such as this dispensing cost survey, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies.

Medians are often preferred to means in situations where the magnitude of outlier values results in an average that does not represent what is thought of as "average" or normal in the common sense. The measurement that is the most ideally suited for determining the typical cost of dispensing prescriptions to Medicaid recipients is the **median weighted by Medicaid volume**.

For all pharmacies in the sample, findings are presented in Table 3.2.

Different Measures of Central Tendency:

Unweighted mean: simply the average cost for each pharmacy.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacies as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: This is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

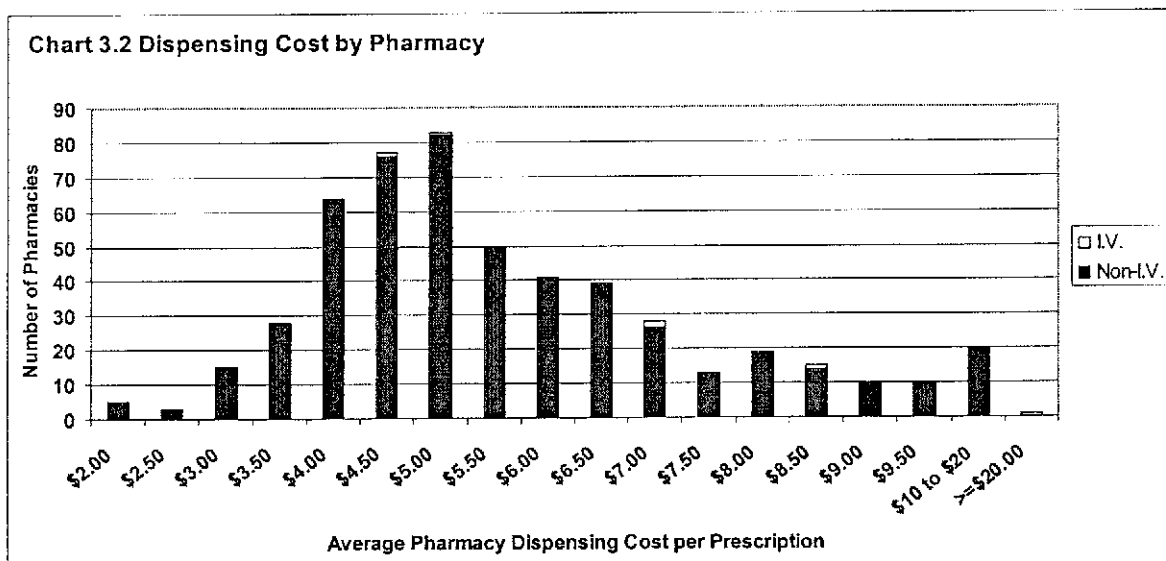
Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost
Median Weighted by Medicaid Volume	\$5.16
Median Weighted by Total Volume	\$4.98
Unweighted Median	\$5.39
Mean Weighted by Medicaid Volume	\$5.52
Mean Weighted by Total Volume	\$5.43
Unweighted Mean	\$6.04

(Dispensing Costs have been inflated to the common point of June 30, 2001)

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest, \$47.21, and lowest, \$2.11, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (303), however, had dispensing costs between \$3.50 and \$6.00.



The most significant characteristic that affected pharmacy dispensing cost was the provision of intravenous (I.V.) solutions. Our analysis revealed significantly higher costs of dispensing associated with the 6 pharmacies in the sample that provided significant levels of this service.

In every pharmacy dispensing study where information on I.V. solution dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing I.V. solutions indicate that the activities and costs involved in filling I.V. prescriptions are significantly different from the costs incurred by the typical retail (or long term care) pharmacy. The reasons for this difference include:

- Costs of special equipment for mixing and storage of I.V. solutions.

- Higher direct labor costs because most I.V. prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non-I.V. prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- A pharmacy may mix and deliver many "dispensings" of a daily I.V. solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

The differences in dispensing costs that were observed for providers of I.V. services compared to those pharmacies, which did not offer I.V. services are summarized in Table 3.3.

Table 3.3 Cost Per Prescription - I.V. Versus non I.V. Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Mean Cost	Standard Deviation	Median Cost Weighted by Medicaid Volume
Pharmacies Dispensing I.V. Prescriptions (>1% of Rx Sales)	6	\$13.46	\$16.60	\$7.38
Pharmacies Not Dispensing Significant I.V. Prescriptions	515	\$5.96	\$2.22	\$5.08

(Dispensing Costs have been inflated to the common point of June 30, 2001)

The average percentage of I.V. prescription sales for these 6 pharmacies was 24%. Based on analyses performed in other studies, pharmacies that dispense I.V. prescriptions as a significant portion of their business can have dispensing costs far in excess of those found in a traditional pharmacy. Based on our cost findings, it must be concluded that the costs incurred to dispense I.V. prescriptions are not representative of the costs incurred by a typical pharmacy. If the costs of I.V. services were to be included in the computation of a mean or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 98% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing I.V. services, the marginal increase in the fee would be immaterial in relation to the cost of actually dispensing an I.V. prescription.⁸

⁸ Although typical dispensing fees reimburse less than the dispensing costs of I.V. pharmacies, they are generally able to break even based on the margin allowed on ingredient cost reimbursement.

Consequently, many of the analyses that follow, exclude providers that had dispensed a significant volume of I.V. prescriptions. Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of I.V. prescriptions.

Table 3.4 Costs Per Prescription – Excluding I.V. Pharmacies

	Dispensing Cost
Median Weighted by Medicaid Volume	\$5.08
Median Weighted by Total Volume	\$4.95
Unweighted Median	\$5.38
Mean Weighted by Medicaid Volume	\$5.42
Mean Weighted by Total Volume	\$5.37
Unweighted Mean	\$5.96

(Dispensing Costs have been inflated to the common point of June 30, 2001)

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

- Total prescription volume
- Chain versus independent pharmacy affiliation
- Urban versus rural pharmacy location
- Type of pharmacy ownership
- Total Medicaid volume
- Medicaid volume as a percent of total volume
- Provision of unit dose dispensing services

One way to determine the statistical significance of differences in dispensing cost between the pharmacies classified by the above referenced characteristics is through the use of a *t*-test. The sample data may show that a certain group of pharmacies has a sample mean lower or higher than another group. Recognizing that the data only represents a sample, a *t*-test is a statistical technique that seeks to determine if the findings are strong enough that a similar relationship can be expected to exist for the entire population. The *t*-test takes into consideration the sample's size, mean, and underlying variance. Although the preference of using a weighted median as a measurement of central tendency was previously explained, a *t*-test requires the comparison of the *unweighted mean* costs.

Exhibit 13 provides additional statistical measures including the standard error of the mean and confidence intervals. Confidence intervals given in Exhibit 13 were calculated using appropriate statistics from the *t* distribution at the 95%

EXHIBIT 111



Survey of Dispensing and Acquisition Costs of Pharmaceuticals in the State of California

Prepared for the
California Department of Health Services
December 2007


Myers and Stauffer_{LC}
Certified Public Accountants

Dispensing Cost Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the following tables and paragraphs. Findings for all pharmacies in the sample are presented collectively, and additionally are presented for subsets of the sample based on pharmacy characteristics. There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median. Findings are presented in the forms of means and medians, both raw and weighted.²⁹

As is typically the case with dispensing cost surveys, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies. Medians are sometimes preferred to averages (i.e., the arithmetic mean) in situations where the magnitude of outlier values results in an average that does not represent what is thought of as "average" or normal in the common sense.

For all pharmacies in the sample, findings are presented in Table 3.2.

Table 3.2 Dispensing Cost Per Prescription – All Responding Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$13.93
Average (Mean) Weighted by Medi-Cal Volume	\$12.40
Unweighted Median	\$11.64
Median Weighted by Medi-Cal Volume	\$10.45

(Dispensing Costs have been inflated to the common point of December 31, 2006)

See Exhibit 10 for a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest and the lowest dispensing

²⁹

Different Measures of Central Tendency:

Unweighted mean: the arithmetic average cost for all pharmacies.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacies as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: this is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more. Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

cost observed for pharmacies in the sample. However, the majority of pharmacies (82%) had dispensing costs between approximately \$7 and \$18.

Several pharmacies included in the cost analysis were identified as specialty pharmacies, which for purposes of this report are pharmacies that reported sales for intravenous, home infusion, enteral nutrition and/or blood factor services of 10% or more of total prescription sales. In addition to specialty pharmacies, several pharmacies were identified as compounding pharmacies which for purposes of this report are pharmacies that reported provision of compounding services for 10% or more of prescriptions dispensed. (The category of pharmacies considered "compounding pharmacies" for purposes of this report excludes pharmacies previously classified as "specialty pharmacies".) The analysis revealed significantly higher cost of dispensing associated with 32 pharmacies in the sample that provided significant levels of specialty or compounding services.³⁰

The difference in dispensing costs that were observed for providers of specialty services compared to those pharmacies that did not offer these specialty services is summarized in Table 3.3.

Table 3.3 Dispensing Cost Per Prescription - Specialty, Compounding and Other Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Average (Mean) Dispensing Cost	Standard Deviation
Specialty Pharmacies (e.g., intravenous, home infusion, enteral nutrition, blood factor products)	18	\$95.32	\$90.93
Compounding Pharmacies	14	\$17.15	\$19.68
Other Pharmacies	1,107	\$12.57	\$5.37

(Dispensing Costs have been inflated to the common point of December 31, 2006)

³⁰ In every pharmacy dispensing study where information on intravenous solution, home infusion, enteral nutrition and blood factor product dispensing activity has been collected by Myers and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing these services indicate that the activities and costs involved in these specialty prescriptions are significantly different from the costs incurred by the traditional retail or institutional pharmacy. The reasons for this difference include:

- Costs of special equipment for mixing and storage of specialty products.
- Higher direct labor costs because most specialty prescriptions must be prepared in the pharmacy, whereas the manual activities to fill traditional prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- There is often inconsistency in the manner in which prescriptions are counted in specialty pharmacies. A specialty pharmacy may mix and deliver many "dispensings" of a daily intravenous, home infusion or blood factor product from a single prescription, counting it in their records as only one prescription. This results in dispensing costs being spread over a number of prescriptions that is smaller than if the pharmacy had counted each refill as an additional prescription.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's calculated cost per prescription.

Pharmacies that dispense specialty prescriptions as a significant part of their business often have dispensing costs in excess of those found in a traditional pharmacy. The analyses summarized in Tables 3.4 and 3.5 below exclude the 32 specialty and compounding pharmacy providers. In making this exclusion, no representation is made that the cost structure of those pharmacies is not important to understand. However, it is reasonable to address issues relevant to those pharmacies separately from the cost structure of the vast majority of Medi-Cal pharmacy providers that provide "traditional" pharmacy services.

Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of specialty and compounded prescriptions.

Table 3.4 Dispensing Cost Per Prescription – Excluding Specialty and Compounding Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$12.57
Average (Mean) Weighted by Medi-Cal Volume	\$10.81
Unweighted Median	\$11.52
Median Weighted by Medi-Cal Volume	\$10.27

(Dispensing Costs have been inflated to the common point of December 31, 2006)

Additional statistical measures of pharmacy dispensing cost are provided in Exhibit 11. For measurements that refer to the urban or rural location of a pharmacy, Myers and Stauffer used the pharmacies' zip code and tables from the U.S. Census Bureau to determine if the pharmacy was located in a Metropolitan Statistical Area (MSA). Pharmacies in an MSA were assigned an "urban" location flag; other pharmacies were assigned a "rural" location flag. A table of zip codes and their designation as urban or rural is included at Exhibit 12.

A breakdown of dispensing cost by region is included at Exhibit 13.

The relationship between total prescription volume and dispensing cost was especially pronounced. Pharmacies were classified into meaningful groups based upon their differences in total prescription volume. Dispensing costs were analyzed based upon these volume classifications.

Table 3.5 Dispensing Cost by Pharmacy Total Annual Prescription Volume

Total Annual Prescription Volume of Pharmacy	Number of Stores ^A	Unweighted Average (Mean) Dispensing Cost	Average (Mean) Weighted by Medicaid Volume
0 to 29,999	232	\$17.76	\$15.23
30,000 to 44,999	220	\$12.59	\$11.76
45,000 to 59,999	234	\$11.41	\$11.16
60,000 to 79,999	230	\$10.56	\$9.93
80,000 and Higher	191	\$10.06	\$9.86

^A Excludes 32 specialty and compounding pharmacies as previously defined for purposes of this report.

There is a significant correlation between a pharmacy's total prescription volume and the dispensing cost per prescription. This result is not surprising because many of the costs associated with a business operation, including the dispensing of prescriptions, have a fixed component that does not vary significantly with increased volume. For stores with a higher total prescription volume, these fixed costs are spread over a greater number of prescriptions resulting in lower costs per prescription. A number of relatively low volume pharmacies in the survey skew the distribution of dispensing cost and increase the measurement of the unweighted average (mean) cost of dispensing.

Table 3.6 Statistics for Pharmacy Total Annual Prescription Volume

Statistic	Value ^A
Mean	58,865
Standard Deviation	46,962
10 th Percentile	21,925
25 th Percentile	33,016
Median	51,180
75 th Percentile	72,481
90 th Percentile	95,204

^A Excludes 32 specialty and compounding pharmacies as previously defined for purposes of this report.

A histogram of pharmacy total annual prescription volume and a scatter-plot of the relationship between dispensing cost per prescription and total prescription volume are included in Exhibit 14.

Other notable breakdowns of pharmacy dispensing cost include the differences in dispensing cost noted for institutional versus retail pharmacies as well as chain retail pharmacies versus independent retail pharmacies. For purposes of this report, an institutional pharmacy is one which dispensed 50% or more of

prescriptions reimbursed by Medi-Cal to recipients of a long-term care (LTC) facility (based on Medi-Cal claims data for the time period of January 1, 2006 to June 30, 2006).

Table 3.7 Dispensing Cost by Pharmacy Type

Type of Pharmacy	Number of Stores ^A	Unweighted Average (Mean) Dispensing Cost	Average (Mean) Weighted by Medi-Cal Volume
Institutional (LTC)	12	\$13.61	\$11.47
Retail Pharmacies (i.e., not "institutional")	1,095	\$12.56	\$10.78
Chain Retail Pharmacies	799	\$12.94	\$11.20
Independent Retail Pharmacies	296	\$11.52	\$10.27

^A Excludes 32 specialty and compounding pharmacies as previously defined for purposes of this report.

Several pharmacy attributes were collected on the cost survey. A summary of these attributes is provided at Exhibit 15.

Components of Dispensing Cost

The dispensing cost of the surveyed pharmacies was broken down into the various components of overhead and labor related costs. Table 3.8 displays the means of the various cost components for pharmacies in the sample. Labor-related expenses accounted for approximately 70% of overall prescription dispensing costs.

Expenses in Table 3.8 are classified as follows:

- Owner professional labor – owner's labor costs were subject to constraints in recognition of its special circumstances as previously noted.
- Employee professional labor consists of employee pharmacists. Other labor includes the cost of delivery persons, interns, technicians, clerks and any other employee with time spent performing the prescription dispensing function of the pharmacy.
- Building and equipment expense includes depreciation, rent, building ownership costs, repairs, utilities and any other expenses related to building and equipment.

- Prescription-specific expense includes pharmacist-related dues and subscriptions, prescription containers and labels, prescription-specific computer expenses, prescription-specific delivery expenses (other than direct labor costs) and any other expenses that are specific to the prescription dispensing function of the pharmacy.
- Other overhead expenses consist of all other expenses that were allocated to the prescription dispensing function of the pharmacy including interest, insurance, telephone, and legal and professional fees.

Table 3.8 Components of Prescription Dispensing Cost

Type of Expense	Unweighted Average (Mean) Dispensing Cost ^A	Average (Mean) Weighted by Medi-Cal Volume ^A
Owner Professional Labor	1.233	\$1.444
Employee Professional and Other Labor	8.367	\$6.399
Building and Equipment	0.815	\$0.735
Prescription Specific Expenses (incl. delivery)	0.849	\$0.945
Other Overhead Expenses	1.299	\$1.286
Total	12.563	\$10.809

^A Excludes 32 specialty and compounding pharmacies as previously defined for purposes of this report.

A pie chart of the components of prescription dispensing cost is provided in Exhibit 16.

Expenses Not Allocated to the Cost of Dispensing

In the following Table 3.9, measurements are provided for certain expenses that were not included in the cost of dispensing. Reasons for not including these costs were discussed previously. For all of the expenses below, average cost per prescription was calculated using a sales ratio as the basis for allocation.

Table 3.9 Non-Allocated Expenses Per Prescription

Expense Category	Unweighted Average (Mean) Cost ^A	Average (Mean) Weighted by Medi-Cal Volume ^A
Bad Debts	\$0.028	\$0.039
Charitable Contributions	\$0.012	\$0.009
Advertising	\$0.528	\$0.394

^A Excludes 32 specialty and compounding pharmacies as previously defined for purposes of this report.

EXHIBIT 112

Analysis of Pharmacy Dispensing Fees for the Indiana Medicaid Program

Prepared for the
Indiana Office of Medicaid Policy and Planning
Indianapolis, Indiana

August 2005


Myers and Stauffer LLC
Certified Public Accountants



JDIND00270

Inflation Factors

All allocated costs for overhead and labor were totaled and multiplied by an inflation factor. Inflation factors are intended to reflect cost changes from the middle of the reporting period of a particular pharmacy to a common fiscal period ending June 30, 2005 (specifically from the *midpoint* of the pharmacy's fiscal year to the *midpoint* of the common fiscal period, December 31, 2004). The midpoint and terminal month indices used were taken from the U. S. Government Consumer Price Index (CPI), Urban Consumer (see Exhibit 6). The use of inflation factors is necessary in order for pharmacy cost data from various fiscal years to be compared uniformly.

Analysis and Findings

The dispensing costs for all pharmacies in the sample are summarized in the following tables and paragraphs. Findings for all pharmacies in the sample are presented collectively, and additionally are presented for subsets of the sample based on pharmacy characteristics. There are several statistical measurements that may be used to express the central tendency of a distribution, the most common of which are the average, or mean, and the median (see sidebar). Findings are presented in the forms of means and medians, both raw and weighted.

As is typically the case with dispensing cost surveys, statistical "outliers" are a common occurrence. These outlier pharmacies have dispensing costs that are not typical of the majority of pharmacies.

Medians are sometimes preferred to averages (i.e., the arithmetic mean) in situations where the magnitude of outlier values results

Different Measures of Central Tendency:

Unweighted mean: the arithmetic average cost for all pharmacies.

Weighted mean: the average cost of all prescriptions dispensed by pharmacies included in the sample, weighted by prescription volume. The resulting number is the average cost for all prescriptions, rather than the average for all pharmacies as in the unweighted mean. This implies that low volume pharmacies have a smaller impact on the weighted average than high volume pharmacies. This approach, in effect, sums all costs in the sample and divides that sum by the total of all prescriptions in the sample. The weighting factor can be either total prescription volume or Medicaid prescription volume.

Median: the value that divides a set of observations (such as dispensing cost) in half. In the case of this survey, the median is the dispensing cost such that the cost of one half of the pharmacies in the set are less than or equal to the median and the dispensing costs of the other half are greater than or equal to the median.

Weighted Median: this is determined by finding the pharmacy observation that encompasses the middle value prescription. The implication is that one half of the prescriptions were dispensed at a cost of the weighted median or less, and one half were dispensed at the cost of the weighted median or more.

Suppose, for example, that there were 1,000,000 Medicaid prescriptions dispensed by the pharmacies in the sample. If the pharmacies were arrayed in order of dispensing cost, the median weighted by Medicaid volume, is the dispensing cost of the pharmacy that dispensed the middle, or 500,000th prescription.

in an average that does not represent what is thought of as "average" or normal in the common sense.

For all pharmacies in the sample, findings are presented in Table 3.2.

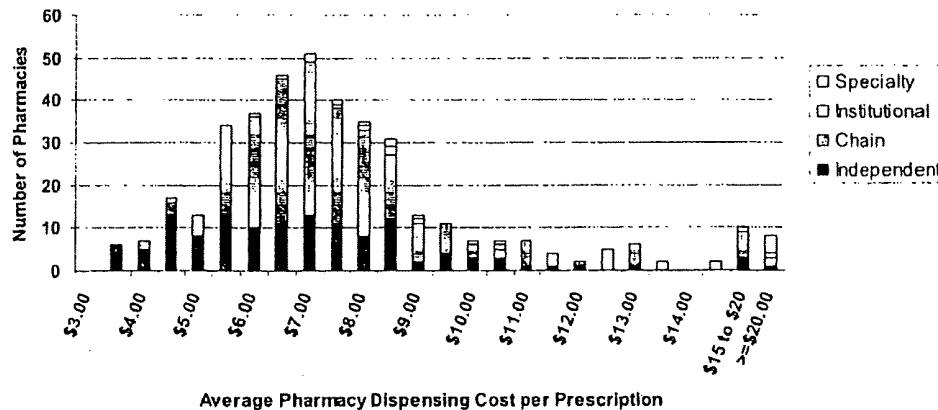
Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$9.53
Average (Mean) Weighted by Medicaid Volume	\$8.26
Unweighted Median	\$7.39
Median Weighted by Medicaid Volume	\$7.48

(Dispensing Costs have been inflated to the common point of December 31, 2004)

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest, over \$300, and the lowest, \$3.65, dispensing cost observed for pharmacies in the sample. The majority of pharmacies (78%), however, had dispensing costs between \$5 and \$10.

Chart 3.2 Dispensing Cost by Pharmacy



Several pharmacies included in the cost analysis were identified as specialty pharmacies, which for purposes of this report are those pharmacies where intravenous, infusion, or blood factor prescriptions constituted 4% or more of their volume of prescription sales dollars. The analysis revealed significantly higher cost of dispensing associated with 11 pharmacies in the sample that provided significant levels of these services.

In every pharmacy dispensing study where information on I.V. solution, home infusion and blood factor product dispensing activity has been collected by Myers

Myers and Stauffer, Inc.
Certified Public Accountants

and Stauffer, such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing these services indicate that the activities and costs involved in these specialty prescriptions are significantly different from the costs incurred by the traditional retail or institutional pharmacy.¹¹ The reasons for this difference include:

- Costs of special equipment for mixing and storage of specialty products.
- Higher direct labor costs because most specialty prescriptions must be prepared in the pharmacy, whereas the manual activities to fill traditional prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- There is often inconsistency in the manner in which prescriptions are counted in specialty pharmacies. A specialty pharmacy may mix and deliver many "dispensings" of a daily I.V., home infusion or blood factor product from a single prescription, counting it in their records as only one prescription. This results in dispensing costs being spread over a number of prescriptions that is smaller than if the pharmacy had counted each refill as an additional prescription.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's calculated cost per prescription.

The difference in dispensing costs that were observed for providers of specialty services compared to those pharmacies that did not offer these specialty services is summarized in Table 3.3.

Table 3.3 Cost Per Prescription - Specialty Versus Other Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Average (Mean) Cost	Standard Deviation
Specialty Pharmacies (e.g., I.V. or infusion)	11	\$65.31	\$116.72
Other Pharmacies	390	\$7.95	\$2.95

(Dispensing costs have been inflated to the common point of December 31, 2004)

Pharmacies that dispense specialty prescriptions as a significant part of their business often have dispensing costs far in excess of those found in a traditional pharmacy. The analyses summarized in Tables 3.4 and 3.5 below exclude the 11 specialty pharmacy providers. In making this exclusion, no representation is made that the cost structure of those pharmacies is not important to understand. However, it is reasonable to address issues relevant to those pharmacies

¹¹ For purpose of this report, institutional pharmacies are those pharmacies where 70% or more of their prescriptions were to nursing facility residents.

separately from the cost structure of the vast majority of Indiana Medicaid pharmacy providers that provide "traditional" pharmacy services.

Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of specialty prescriptions.

Table 3.4 Cost Per Prescription – Excluding Specialty Pharmacies

	Dispensing Cost
Unweighted Average (Mean)	\$7.95
Average (Mean) Weighted by Medicaid Volume	\$8.07
Unweighted Median	\$7.30
Median Weighted by Medicaid Volume	\$7.19

(Dispensing costs have been inflated to the common point of December 31, 2004)

Additional statistical measures of pharmacy dispensing cost are provided in Exhibit 7.

Analysis of Pharmacy Net Margins

To analyze pharmacy profitability, Myers and Stauffer utilized the dispensing cost survey data to directly calculate net margins for pharmacies participating in the survey. Net margins are presented in two ways: on a percentage basis, and on a per prescription basis.

In its most basic form, net margins on a percentage basis are the result of the following calculation:

$$\text{Percent Net Margin} = \frac{(\text{Rx Sales}) - (\text{Rx Cost of Goods}) - (\text{Rx Dispensing Related Costs})}{(\text{Rx Sales})}$$

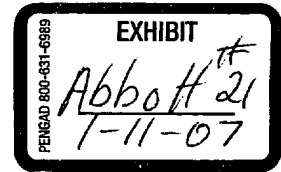
Similarly, margins on a per prescription basis resulted from the following calculation:

$$\text{Net Margin per Rx} = \frac{(\text{Rx Sales}) - (\text{Rx Cost of Goods}) - (\text{Rx Dispensing Related Costs})}{(\text{Total Number of Rx's Dispensed})}$$

In both cases, the estimate of pharmacy net margins is exclusively associated with the prescription dispensing function of the pharmacy. No attempt was made to quantify the profitability of the non-prescription related aspects of pharmacy operations.

The determination of prescription dispensing-related cost resulted from the cost-finding methodologies described above. Additionally, allowable dispensing costs

EXHIBIT 113



Determination of the Cost of Dispensing Pharmaceutical Prescriptions For the Texas Vendor Drug Program

Prepared for the
Texas Health and Human Services Commission
Austin, Texas

August 2002



Myers and Stauffer_{LC}
Certified Public Accountants

Chapter

1

Executive Summary**Introduction**

Under contract to the Texas Health and Human Services Commission, Myers and Stauffer LC performed a study of the cost of dispensing prescription medications to Medicaid recipients. This report includes a narrative of the methodologies and findings relevant to the survey of dispensing costs.

The dispensing cost study followed the methodology and used a survey instrument similar to those used by Myers and Stauffer in Medicaid pharmacy engagements in 18 other states. A stratified random sample of Texas pharmacy providers enrolled in the Medicaid program were surveyed; 703 pharmacies filed dispensing cost surveys that could be included in the study. All data received including the dispensing cost surveys were subject to extensive desk review procedures. Additionally, 31 pharmacies were selected for on-site field examinations to validate reported costs.

Summary of Findings

The significant findings of the study are as follows:

- **The statewide median cost of dispensing, weighted by Medicaid volume, was \$5.95.**

Table 1.1 Dispensing Cost^A for Texas Pharmacies

Pharmacies Included in Analysis ^B	650
Weighted Median ^C	\$5.95
Weighted Mean ^C	\$6.16
Unweighted Mean	\$6.96

^A Inflated to June 30, 2002.

^B Excludes pharmacies that dispensed intravenous, home infusion or compounded prescriptions.

^C Weighted by Medicaid volume.

- Average dispensing cost at certain pharmacy specialties was observed to be higher than dispensing cost at "typical" retail pharmacies. In particular we noted higher dispensing cost associated with pharmacies that provided services related to the dispensing of intravenous, home infusion and

compounded prescriptions.

- There was some association between dispensing cost and the urban or rural location of a pharmacy. Pharmacies in urban areas tended to have higher dispensing costs. This was noted to be particularly the case for labor related costs.
- No association was found between dispensing cost and unit-dose packaging or other measures of long term care dispensing activity; i.e., ambulatory and long term care pharmacies had similar mean costs of dispensing.
- No systematically higher costs associated with pharmacies that have a higher percentage of Medicaid prescription volume were found.

Conclusions and Recommendations

The Commission's current pharmacy dispensing fee results in average payments that are slightly higher than the median cost of dispensing prescriptions¹. Any overall evaluation of the adequacy of current pharmacy reimbursement rates should consider findings related to dispensing cost in tandem with an analysis of ingredient reimbursement rates and the cost pharmacies incur acquiring prescription medications. Similarly, possible modifications to reimbursement policies should consider both dispensing and acquisition cost aspects of reimbursement. Should the Commission desire to modify its current dispensing fee, several options are available:

1) Continued Use of a Variable Dispensing Fee:

The Commission currently utilizes a dispensing fee that is variable based upon the ingredient cost of the medication being dispensed (i.e. the inventory management factor). A distinct disadvantage to the variable dispensing fee is that there is little correlation between the actual cost to dispense and the cost of the medication being dispensed provided that similar medication forms are being compared (e.g. dispensing a prescription of 30 pills of a low-cost generic medication requires essentially the same commitment of resources as dispensing a prescription of 30 pills of an expensive brand-name product). Furthermore, increases in drug cost (whether due to manufacturer price increases or the introduction of new and more expensive products) causes increases in the dispensing fee at a rate that is typically higher than the rate of inflation for overhead and labor dispensing costs.

One advantage of the variable dispensing fee methodology is that dispensing fees paid for certain specialty products that require special preparation (e.g. intravenous and home infusion products) are higher on average due to the high

¹ While the Commission's base dispensing fee is \$5.27, the actual average dispensing fee is approximately \$6.10 to \$6.40 with the inventory management factor add-on to the dispensing fee.

cost of the drug ingredients typically used in these prescriptions. However, the current overall cap on the dispensing fee of \$200 does appear to be out of proportion to actual dispensing costs observed.

2) Flat Rate Dispensing Fee:

Most states and private insurers use a single, flat rate dispensing fee. These fees are administratively simple to use and are readily understood by all providers. Should the Commission decide to set such a fee, it would be appropriate to set the fee considering the actual dispensing costs incurred in an efficient pharmacy operation.

The dispensing cost study considered several pharmacy attributes to determine if dispensing costs were significantly different based on variables of pharmacy affiliation, location, and specialty. For many tested attributes, we did not observe statistically significant differentials in dispensing cost. We did, however, observe systemically higher dispensing cost associated with pharmacies that specialize in dispensing intravenous and compounded prescriptions. Several significant issues related to these pharmacy specialties are addressed in the study, and one possibility for the Commission to consider is to set multiple flat rate pharmacy dispensing fees specific to certain specialties. We note, however, that many Medicaid pharmacy programs have successfully operated using a single dispensing fee for all pharmacy types. A single dispensing fee must be considered in conjunction with ingredient reimbursement such that overall levels of reimbursement are sufficient to guarantee sufficient participation of various pharmacy specialties.

3) Combination of a Variable Dispensing Fee and a Flat Rate Dispensing Fee

Alternatively, the Commission could evaluate implementing a flat rate dispensing fee to be used in "traditional" pharmacy settings, while maintaining the variable dispensing fee for use among certain pharmacy specialty types. Such a combination would maintain the most advantageous aspects of the variable dispensing fee, yet set the reimbursement for the vast majority of "traditional" prescriptions in a manner consistent with the most widely utilized dispensing fee methodology (i.e., a flat rate).

For all pharmacies in the sample, dispensing cost findings are presented in Table 3.2.

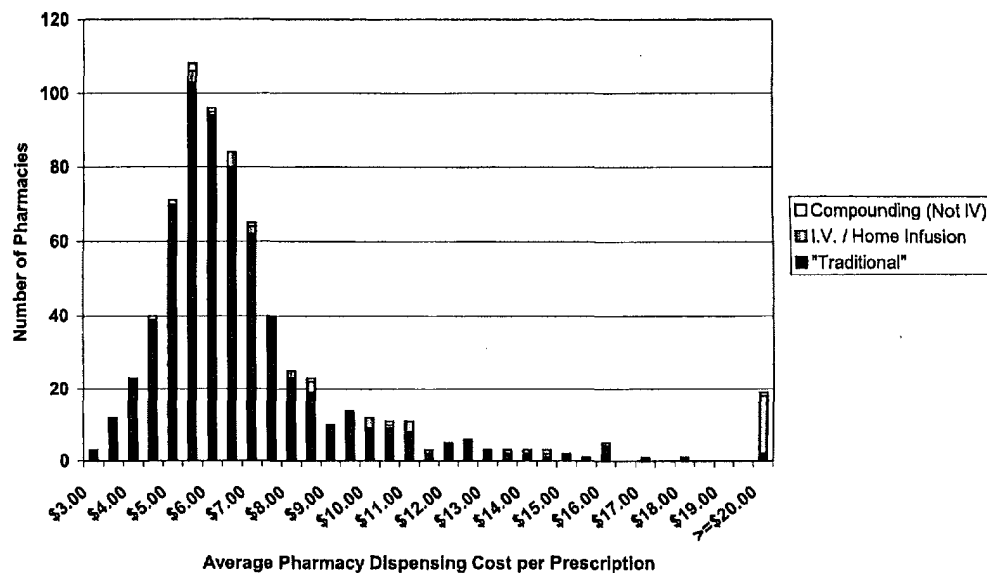
Table 3.2 Cost Per Prescription – All Pharmacies

	Dispensing Cost ¹
Unweighted Mean	\$9.12
Mean Weighted by Medicaid Volume	\$6.58
Unweighted Median	\$6.48
Median Weighted by Medicaid Volume	\$6.11

¹ Dispensing Costs have been inflated to the common point of June 30, 2002.

Chart 3.2 is a histogram of the dispensing cost for all pharmacies in the sample. There was a large range between the highest and lowest dispensing cost observed for pharmacies in the sample. The majority of pharmacies (75%), however, had dispensing costs between \$4 and \$8.

Chart 3.2 Dispensing Cost by Pharmacy



The two most significant characteristics that affected pharmacy dispensing cost were the provision of intravenous or home infusion solutions and the provision of pharmaceutical compounding services. Our analysis revealed significantly higher cost of dispensing associated with the 53 pharmacies in the sample that provided these services.

In every pharmacy dispensing study where information on intravenous solution and home infusion dispensing activity has been collected by Myers and Stauffer,

such activity has been found to be associated with higher dispensing costs. Discussions with pharmacists providing intravenous solutions indicate that the activities and costs involved in filling intravenous prescriptions are significantly different from the costs incurred by the typical retail (or long term care) pharmacy. The reasons for this difference include:

- Costs of special equipment for mixing and storage of intravenous solutions.
- Higher direct labor costs because most intravenous prescriptions must be mixed in the pharmacy, whereas the manual activities to fill a non- intravenous prescription are mainly limited to counting pills (or vials, etc.) and printing and affixing the label.
- A pharmacy may mix and deliver many "dispensings" of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions.

This latter factor, in particular, can have a dramatic impact on increasing a pharmacy's apparent cost per prescription.

Similar to the dispensing of intravenous prescriptions, the provision of complex pharmaceutical compounding services was also observed to be associated with significantly higher cost.

The differences in dispensing costs which were observed for providers of intravenous or compounding services compared to those pharmacies that did not offer these services are summarized in Table 3.3.

Table 3.3 Cost Per Prescription - Intravenous / Compounding Pharmacies Versus other Pharmacies

Type of Pharmacy	Number of Pharmacies	Unweighted Mean Cost ¹	Standard Deviation
Pharmacies Dispensing Intravenous / Home Infusion Prescriptions	43	\$41.75	\$72.59
Pharmacies Dispensing Compounded Prescriptions (but not intravenous Rx's)	10	\$9.13	\$5.48
Pharmacies Not Dispensing Intravenous or Compounded Prescriptions	650	\$6.96	\$2.46

¹ Dispensing Costs have been inflated to the common point of June 30, 2002.

Based on this analysis and analyses performed in other studies, pharmacies that dispense intravenous or compounded prescriptions as a significant part of their business can have dispensing costs far in excess of those found in a traditional pharmacy. Based on our cost findings, it must be concluded that the costs incurred to dispense intravenous or compounded prescriptions are not representative of the costs incurred by a general pharmacy. If the costs of intravenous and compounding services were to be included in the computation of an mean or median dispensing cost that was then used to establish a reimbursement rate, the effect would be to pay approximately 95% of pharmacies an additional allowance for a service they never provided. And, for those pharmacies providing intravenous services, the marginal increase in the fee would be immaterial in relation to the cost of actually dispensing an intravenous or compounded prescription.¹¹

Consequently, many of the analyses that follow exclude providers that had dispensed a significant volume of intravenous or compounded prescriptions. Table 3.4 restates the measurements noted in Table 3.2 excluding pharmacies that dispensed significant volumes of intravenous or compounded prescriptions.

Additional comments regarding pharmacies that dispense intravenous or compounded prescriptions is included in Appendix D.

Table 3.4 Cost Per Prescription – Excluding Intravenous and Compounding Pharmacies

	Dispensing Cost
Unweighted Mean	\$6.96
Mean Weighted by Medicaid Volume	\$6.16
Unweighted Median	\$6.42
Median Weighted by Medicaid Volume	\$5.95

¹ Dispensing Costs have been inflated to the common point of June 30, 2002.

Analysis of Pharmacy Characteristics

Responding pharmacies were categorized into various groups of interest and their dispensing costs analyzed to determine statistical significance. These characteristics include:

- Total prescription volume
- Chain versus independent pharmacy affiliation
- Urban versus rural pharmacy location

¹¹ Although typical dispensing fees reimburse less than the dispensing costs of intravenous pharmacies, they are generally able to break even based on the margin allowed on ingredient cost reimbursement. Compounding pharmacies predominantly market their services to self-pay customers and do not solicit Medicaid reimbursement for most compounding services.

Appendix D. Dispensing Cost Issues for Institutional, Intravenous, Home Infusion and Compounding Pharmacies

Based on previous experience performing dispensing cost studies, Myers and Stauffer has become aware of specific concerns relating to the dispensing costs of certain pharmacy specialties. Paramount among the concerns expressed are the dispensing costs of pharmacies that dispense prescriptions to residents of long-term care facilities, pharmacies that dispense intravenous or home infusion prescriptions, and pharmacies that provide specialty prescription compounding services. This appendix includes a discussion of issues specific to these pharmacy types.

Institutional Pharmacies

The survey data supported the conclusion that there was not a statistically significant difference in dispensing cost for pharmacies that primarily serviced long-term care facilities versus pharmacies with a more traditional retail structure. It was noteworthy that these institutional pharmacies are operated in a distinctly different manner than a traditional retail pharmacy. One primary consideration is that these pharmacies tended to be very high volume pharmacies. As noted previously in the report, pharmacies with a high prescription volume tend to be more efficient with lower dispensing costs per prescription.

Institutional pharmacies typically provide services not offered in many retail pharmacies. This includes a heavier reliance on delivery services and unit dose dispensing systems. While there may be higher labor and overhead costs associated with the prescription delivery and packaging of unit dose prescriptions, there are also efficiencies associated with the "assembly line" production style of the pharmacy. In contrast, traditional retail pharmacies dispense prescriptions "one at a time" as customers come to the store or as physician office calls are received. The greater control over the queuing of prescription requests in an institutional pharmacy creates a significant advantage in terms of scheduling the optimal amount of labor required to perform prescription dispensing functions.

It is also noteworthy that institutional pharmacies often provide other services to nursing homes beyond the typical prescription dispensing services offered in a retail pharmacy. This includes the services of a consultant pharmacist in the

¹⁶ Myers and Stauffer tried to delineate the issue of allowing prescription sales on credit to imply that a pharmacy maintained its own accounts receivables balance as opposed to merely accepting credit cards as a form of payment. However, there apparently was some confusion on this issue; therefore the results obtained do not appear to represent "sales on credit" in the manner intended.

long-term care facility as well as medication carts, emergency medication kits and various expanded inventory control procedures. It is also significant to note that these additional services are provided as the result of a direct contractual relationship between the institutional pharmacy and the long-term care facility. Remuneration to the pharmacies for these services is subject to the provisions of those contractual relationships. Consequently, any cost for these pharmaceutical consulting services would be reported to Medicaid via the *nursing facility cost report*. It would therefore be inappropriate to include these consulting services in a survey of the cost of *dispensing* prescription medications. To the extent that such costs could be explicitly identified, the costs associated with consultant pharmacists were not included in the analysis of dispensing cost.

Intravenous and Home Infusion Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling intravenous or home infusion prescriptions. In every dispensing cost survey performed by Myers and Stauffer in which data on the provision of intravenous services was collected, the provision of this service has been associated with higher dispensing costs.

There is some difficulty, however, in determining an average dispensing cost for this type of activity with any degree of stability. Reasons for this include the following:

- There is a significant inconsistency in the way in which pharmacies count the number of intravenous prescriptions dispensing. A pharmacy may mix and deliver many "dispensings" of a daily intravenous solution from a single prescription, thus incurring additional costs spread over a smaller number of prescriptions. Alternatively, some pharmacies count each daily dispensing individually.
- Many pharmacies that dispense intravenous prescriptions also dispense traditional prescriptions. The task of segregating intravenous and traditional dispensing costs is made difficult by the combined approach to financial and prescription record keeping which make it difficult to isolate costs associated with the dispensing of intravenous prescriptions.
- Based on a review of the literature, there is also considerable variability in the labor and equipment cost inputs into various types of intravenous prescriptions.

Because of these factors, Myers and Stauffer has typically seen extreme variation in the dispensing cost calculated for pharmacies that provide intravenous prescription services. In the current survey, the dispensing cost in the 43 responding pharmacies that dispensed intravenous prescriptions ranged from approximately \$6.00 to over \$100. The mean dispensing cost was \$41.75, but it should be noted that this mean is highly unstable (i.e. there was a very high standard deviation).

One of the reasons it is difficult to determine a stable average dispensing cost for pharmacies that provide intravenous prescriptions is the low number of pharmacies for which data is collected in each survey. Additionally, the proportion of intravenous prescriptions filled at each pharmacy is highly variable.

To better understand dispensing cost in these pharmacies, Myers and Stauffer performed an analysis of the dispensing cost from data collected on over 100 surveys in recent years (inflation adjusted to calendar year 2002). Data for this analysis includes pharmacies in Texas, but was also supplemented by data from other states. Although each of these pharmacies had indicated on the survey forms that they dispensed intravenous prescriptions, most of these pharmacies also dispensed traditional prescriptions as well. After calculating a cost of dispensing for each pharmacy, statistical regression techniques were used in an attempt to isolate the costs associated strictly with the dispensing of intravenous prescriptions.

Although the analysis should not be considered comprehensive, the data suggests that dispensing costs ranging from \$20 to \$40 per intravenous prescription would be considered typical. In addition to variable states of efficiency in these pharmacies, it should be noted that there are various levels of complexity associated with dispensing intravenous prescriptions. A pharmacy's utilization mix of dispensing various types of intravenous prescriptions can have a significant effect on dispensing cost. It is therefore possible that some pharmacies could very well have dispensing costs in excess of \$40 per prescription.

Under current policies, the Health and Human Services Commission reimburses for intravenous prescriptions in a dispensing fee plus ingredient reimbursement formula similar to traditional retail prescriptions. Although dispensing costs at intravenous pharmacies appears to be in excess of the current base dispensing fee (\$5.27), this reimbursement methodology has been accepted by these pharmacies likely due to the inventory management add-on to the dispensing fee (which can be significant on the expensive drugs traditionally dispensed in intravenous forms) and the margin on ingredient reimbursement which has allowed pharmacies to offset any shortfall from the base dispensing fee.

In recent years, some states have dealt with the issue of intravenous prescription reimbursement rates *in light of reduced ingredient reimbursement*. For example, the state of Utah recently adopted "revised AWP's" for certain products based on the recommendations of the United States Department of Justice and the National Association of Medicaid Fraud Control Units (NAMFCU).¹⁷ Products with these "revised AWP's" were primarily injectable, infusion, and inhalation drugs. Subsequent to the adoption of these prices, intravenous and home infusion pharmacies alleged that the margins on ingredient reimbursement were no longer sufficient such that they could accept the typical Medicaid dispensing fee. As a result of these allegations, the state of Utah created alternate

¹⁷ "Medicaid's Use of Revised Average Wholesale Price." Department of Health and Human Services, Office of the Inspector General, OEI-03-01-00010, September 2001.

dispensing fees primarily for home infusion pharmacies. The rates were set through a negotiated process and varied based on the perceived level of input costs required to fill the prescription. Table D.1 shows the various dispensing fee categories created by Utah Medicaid.

Table D.1 Utah Medicaid Home Infusion Drug Categories¹⁸

Dispensing Fee Category	Level of Service	Current Dispensing Fee
Category 'B' or 'C'	Traditional: technician input point-of-sale; pharmacist input; fixed overhead costs	\$3.90 or \$4.40
Category 'J'	Dispensing fee B or C plus: Labor II factor; clinical monitoring; prefilled syringes/PB; horizontal hood; technician input	\$8.90
Category 'K'	Dispensing fee J plus: Clinical monitoring; quality assurance; labor factor	\$18.90
Category 'L'	Dispensing fee K plus: Replacement into individual doses such as syringe; recalculations from vial to syringe to bag; large bulk inventory costs; peer review	\$22.90
Category 'M'	Dispensing fee L plus: Double gloves; gown; vertical hood; labor factor V; OSHA documentation; special handling; special storage; clean room; hazardous waste	\$33.90

The Utah Medicaid home infusion dispensing fee methodology has the advantage that dispensing fee reimbursement is more closely tied to actual dispensing costs. It has the disadvantage that it necessitates increased complexity for the claims adjudication process. It is noteworthy to emphasize that the Utah rates were established based on a negotiated process rather than being based on a survey of actual costs and that the rates were created only because of significant cuts in ingredient reimbursement such that the margin on ingredients for intravenous prescriptions was reduced.

¹⁸ Derived from Utah Medicaid State Plan Amendment documents and discussions with Utah Medicaid officials.

Compounding Pharmacies

A small number of pharmacies that responded to the dispensing cost survey indicated that a significant portion of their business consisted of filling compounded prescriptions. Survey data indicated that this practice was associated with statistically significant higher dispensing costs.

The observation that the practice of compounding prescriptions resulted in higher dispensing cost is not surprising given the special labor and equipment needs that are required in this type of pharmacy practice. Preparation time for individual compounded prescriptions, though highly variable depending upon the specific task, tend to be higher than the time associated with filling "traditional" prescriptions in pre-manufactured tablet, capsule, or liquid (etc.) forms. Additionally, the practice of pharmacy compounding does require some additional expensive equipment such as clean rooms for sterile preparation, sensitive scales, and other equipment for making special pharmaceutical dosage forms.

The practice of pharmaceutical compounding has proven to be somewhat controversial given the perception of a fine line between "compounding" and "manufacturing". The U.S. Food and Drug Administration has imposed some limits relating to the practice and advertising of compounding services.

Despite these restrictions, the practice of compounding is appealing to many pharmacists, not only because the practice is perceived to be a return to a historical form of pharmacy practice, but also because compounding is a niche business, which, if successful, can yield high margins. In part, these high margins are due to the promotion of compounding services primarily to cash customers, often in more affluent areas. In some aspects, pharmacy compounding appeals to those seeking "alternative" forms of medical treatments and provides traditional medications in non-traditional forms or in a form free of dyes or other perceived allergens.

Compounding pharmacies have made only minimal attempts to promote wide acceptance of third-party coverage for compounded pharmaceuticals. Primarily, this appears to be related to a desire to avoid reimbursement limitations that could be imposed by a broad acceptance of third party reimbursement plans and fee schedules based primarily on ingredient cost. Compounding pharmacists seem to prefer to maintain the relatively high margins and billing simplicity associated with cash-paying customers. Additionally, because of the potential for billing complexities associated with compounded prescriptions (which sometimes cannot be captured with ease using typical pharmacy claim forms), pharmacies have experienced difficulty in establishing acceptable standards for transmitting suitable claims data that is compatible with the electronic claims processing standards used by most third party payers.

Due to the apparent variability in the cost associated with dispensing compounded prescriptions, a single dispensing fee for compounded prescriptions may be less ideal for matching reimbursement with actual costs incurred. The primary variable that determines dispensing cost incurred by a pharmacy is the amount of professional time required to prepare a particular compounded prescription. A more limited amount of cost variability can be attributed to the special equipment needs of certain preparations. To determine the precise mix of cost inputs into the various types of compounded prescriptions would require some type of time and motion study, the cost of which may be unjustified given the relatively small volume that would be associated with compounded prescription volume.

Given these limitations, a negotiated fee or set of fees is likely to be a preferable means of setting rates for compounding services. Such a fee could be linked to specific types of prescriptions or could be linked to professional time expended with reasonable upper limits. The inclusion of certain compounding services under prior authorization protocols to determine medical necessity may also be appropriate if modifications to dispensing fees for compounding services are considered.

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